

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Art Unit : 1745
Examiner : Helen Chu
Applicants : Mark A. Schubert et al.
Appln. No. : 10/682,223
Filed : October 9, 2003
Confirmation No. : 8111
For : NON-AQUEOUS CELL WITH IMPROVED
THERMOPLASTIC SEALING MEMBER

TRANSMITTAL OF APPEAL BRIEF
(PATENT APPLICATION - 37 C.F.R. § 41.37)

1. Transmitted herewith is the APPEAL BRIEF in this application, with respect to the Notice of Appeal filed on November 21, 2007.

2. **STATUS OF APPLICANTS**

This application is on behalf of:

 x other than a small entity.

 a small entity.

A verified statement:

 is attached.

 was already filed.

3. **FEE FOR FILING APPEAL BRIEF**

Pursuant to 35 U.S.C. §41(a)(6), the fee for filing the Appeal Brief is:

 small entity \$255.00

 x other than a small entity \$510.00

Appeal Brief fee due: \$510.00

4. **EXTENSION OF TERM**

The proceedings herein are for a patent application and the provisions of 35 USC §41(a)(8) apply.

 Applicant petitions for an extension of time under 37 CFR §1.136:

| <u>Extension (months)</u> | <u>Fee for other than small entity</u> | <u>Fee for small entity</u> |
|-------------------------------|--|---------------------------------|
| <u> </u> one month | \$120.00 | \$60.00 |
| <u> </u> two months | \$460.00 | \$230.00 |
| <u> </u> three months | \$1050.00 | \$525.00 |
| <u> </u> four months | \$1640.00 | \$820.00 |
| <u> </u> five months | \$2230.00 | \$1115.00 |
| | FEE: \$ | |

If an additional extension of time is required, please consider this a petition therefor.

5. TOTAL FEE DUE

The total fee due is:

Appeal Brief fee: \$ 510.00

Extension fee (if any) \$

TOTAL FEE DUE: \$ 510.00

6. FEE PAYMENT

 Attached is a check in the sum of \$ ____.

 x Charge Account No. 16 2463 the sum of \$ 510.00.

7. FEE DEFICIENCY

 x If any additional extension and/or fee is required, this is a request therefor
and to charge Account No. 16 2463.

and/or

 x If any additional fee for claims is required, charge Account No.
16 2463.

Respectfully submitted,

January 22, 2008
Date

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APPEAL BRIEF (37 C.F.R. § 41.37)

This brief is in furtherance of the Notice of Appeal filed in this case on
November 21, 2007.

The fees required under 35 U.S.C. § 41(a)(6) are dealt with in the accompanying
TRANSMITTAL OF APPEAL BRIEF.

This brief contains these items under the following headings in the order set forth
below (37 C.F.R. § 41.37(c)):

- I. Real Party in Interest
- II. Related Appeals and Interferences
- III. Status of Claims
- IV. Status of Amendments
- V. Summary of Claimed Subject Matter
 - A. Independent Claim 1
 - B. Independent Claim 18
 - C. Dependent Claim 24
 - D. Dependent Claim 25
- VI. Grounds of Rejection to Be Reviewed on Appeal
 - A. Claims 1-12 and 18-21 Stand Rejected Under 35 U.S.C. § 103(a) as Obvious Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al.

- B. Claims 13-17 and 23 Stand Rejected Under 35 U.S.C. § 103(a) as Being Unpatentable Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al., and Further in View of U.S. Patent No. 4,804,595 to Bakos et al.
- C. Claims 24 and 25 Stand Rejected Under 35 U.S.C. § 103(a) as Unpatentable Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al., and Further in View of U.S. Patent No. 4,501,805 to Yasuda et al.

VII. Argument

- A. Rejection of Claims 1-12 and 18-21 Under 35 U.S.C. § 103(a) as Obvious Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al.
- B. Rejection of Claims 13-17 and 23 Under 35 U.S.C. § 103(a) as Unpatentable Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al., and Further in View of U.S. Patent No. 4,804,595 to Bakos et al.
- C. Rejection of Claims 24 and 25 Under 35 U.S.C. § 103(a) as Unpatentable Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al., and Further in View of U.S. Patent No. 4,501,805 to Yasuda et al.

VIII. Conclusion

IX. Claims Appendix

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XI. Related Proceedings Appendix

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I. Real Party in Interest

The real party in interest in this application is Eveready Battery Company, Inc., the assignment to which was recorded at Reel 014594, Frame 0440 on October 9, 2003.

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II. Related Appeals and Interferences

Appellants are aware of no appeals, interferences or judicial proceedings which may be related to, directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

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III. Status of Claims

This is an appeal from the Final Rejection of claims 1-25 mailed on May 24, 2007. No claims currently stand allowed. The rejection of claims 1-25 is appealed.

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IV. Status of Amendments

There were no amendments made to any of pending claims 1-25 during prosecution of U.S. Patent Application No. 10/682,223.

V. Summary of Claimed Subject Matter

A. Independent Claim 1

Independent claim 1 defines an electrochemical battery cell (10) comprising a housing comprising a metal container with at least one open end and at least a first metal cover (14) disposed in the at least one open end of the container; a positive electrode (20); a negative electrode (18); a separator (26) disposed between the positive (20) and negative electrodes (18); an electrolyte; and a first thermoplastic seal member (page 7, lines 5-10; page 9, lines 5-31; Fig. 1), comprising a thermoplastic resin and more than 10 weight percent of a thermal-stabilizing filler (page 7, lines 10-12), the first thermoplastic seal member sealing an aperture in at least one of the container and the first cover (14) and forming at least a part of a pressure relief vent for releasing pressure from the cell (10) (page 7, lines 12-14; page 9, lines 5-31; Fig. 1).

B. Independent Claim 18

Independent claim 18 defines an electrochemical battery cell (10) comprising: a housing comprising a metal container with at least one open end and at least a first metal cover (14) disposed in the at least one open end of the container; a pressure relief vent; a positive electrode (20); a negative electrode (18) comprising at least one member of the group consisting of lithium, a lithium alloy and a lithium intercalation compound; a separator (26) disposed between the positive (20) and negative electrodes (18); a nonaqueous electrolyte comprising an organic solvent; and a first thermoplastic seal member sealing an aperture in the first cover (14) (page 7, lines 15-22; page 9, lines 5-31; Fig. 1); wherein the thermoplastic seal member: is made from a material comprising at least one polymeric resin selected from the group consisting of ethylene-tetrafluoroethylene, polybutylene terephthalate, polyphenylene sulfide, polyphthalamide, ethylene-chlorotrifluoroethylene, chlorotrifluoroethylene, perfluoroalkoxyalkane, fluorinated perfluoroethylene polypropylene and polyetherether ketone, as well as more than 10 weight percent of a thermal-stabilizing filler; has a hollow cylindrical shape; and cooperates with the first metal cover (14) and a plug disposed within the thermoplastic seal member to form a compression seal for the aperture and to release pressurized gas

from within the cell (10) when a cell internal pressure exceeds a predetermined level (page 7, lines 22-30; page 9, lines 5-31; Fig. 1).

C. Dependent Claim 24

Dependent claim 24 defines an electrochemical battery cell (10) comprising: a housing comprising a metal container with at least one open end and at least a first metal cover (14) disposed in the at least one open end of the container; a pressure relief vent; a positive electrode (20); a negative electrode (18) comprising at least one member of the group consisting of lithium, a lithium alloy and a lithium intercalation compound; a separator (26) disposed between the positive (20) and negative electrodes (18); a nonaqueous electrolyte comprising an organic solvent; and a first thermoplastic seal member sealing an aperture in the first cover (14) (page 7, lines 15-22; page 9, lines 5-31; Fig. 1); wherein the thermoplastic seal member: is made from a material comprising at least one polymeric resin selected from the group consisting of ethylene tetrafluoroethylene and polybutylene terephthalate, as well as more than 10 weight percent of a thermal-stabilizing filler; has a hollow cylindrical shape; and cooperates with the first metal cover (14) and a plug disposed within the thermoplastic seal member to form a compression seal for the aperture and to release pressurized gas from within the cell (10) when a cell internal pressure exceeds a predetermined level (page 7, lines 22-30; page 9, lines 5-31; Fig. 1).

D. Dependent Claim 25

Dependent claim 25 defines an electrochemical battery cell (10) comprising: a housing comprising a metal container with at least one open end and at least a first metal cover (14) disposed in the at least one open end of the container; a pressure relief vent; a positive electrode (20); a negative electrode (18) comprising at least one member of the group consisting of lithium, a lithium alloy and a lithium intercalation compound; a separator (26) disposed between the positive (20) and negative electrodes (18); a nonaqueous electrolyte comprising an organic solvent; and a first thermoplastic seal member sealing an aperture in the first cover (14) (page 7, lines 15-22; page 9, lines 5-31; Fig. 1); wherein the thermoplastic seal member: is made from a material comprising at least one polymeric resin selected from the group consisting of ethylene-

tetrafluoroethylene, as well as more than 10 weight percent of a thermal-stabilizing filler; has a hollow cylindrical shape; and cooperates with the first metal cover (14) and a plug disposed within the thermoplastic seal member to form a compression seal for the aperture and to release pressurized gas from within the cell (10) when a cell internal pressure exceeds a predetermined level (page 7, lines 22-30; page 9, lines 5-31; Fig. 1).

VI. Grounds of Rejection to be Reviewed on Appeal

A. Claims 1-12 and 18-21 stand rejected under 35 U.S.C. § 103(a) as obvious over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in view of U.S. Patent No. 6,236,205 to Chen et al.

B. Claims 13-17 and 23 stand rejected under 35 U.S.C. § 103(a) as being unpatentable over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in view of U.S. Patent No. 6,236,205 to Chen et al., and further in view of U.S. Patent No. 4,804,595 to Bakos et al.

C. Claims 24 and 25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in view of U.S. Patent No. 6,236,205 to Chen et al., and further in view of U.S. Patent No. 4,501,805 to Yasuda et al.

VII. Argument

- A. Rejection of Claims 1-12 and 18-21 Under 35 U.S.C. § 103(a) as Obvious Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in View of U.S. Patent No. 6,236,205 to Chen et al.

Of this group of claims, claims 1 and 18 are independent claims. Claims 2-12 depend from claim 1. Claims 19-21 depend from claim 18. Claims 1-12 and 18-21 stand rejected as obvious over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. ("Schubert") in view of U.S. Patent No. 6,236,205 to Chen et al. ("Chen"). As further discussed below, Appellants respectfully traverse this rejection.

The *Manual of Patent Examining Procedure* (MPEP) sets forth that the standard for obviousness requires that there must be some suggestion or motivation, either in the references themselves or in the knowledge generally available to one of ordinary skill in the art, to modify the reference or combine reference teachings. MPEP § 2143. The combination of prior art references must have been "obvious to a person of ordinary skill in the art." *KSR Int'l Co. v. Teleflex Inc.*, 127 S. Ct. 1727, 1741 (2007). In order to establish a *prima facie* case of obviousness, there must be some apparent reason why a person of ordinary skill in the art would combine the references, and the analysis should be made explicit. *Id.*

In an Office Action mailed October 11, 2006, the Examiner rejected all of the pending claims and stated that it would have been obvious to combine the electrochemical cell of Schubert with the automotive seal gasket disclosed in Chen that was allegedly made of 20% E-glass in a suitable thermoplastic resin matrix to arrive at the instantly claimed invention. (October 11, 2006, Office Action, p. 2).

On March 12, 2007, Appellants submitted the Affidavit of Mark A. Schubert Pursuant to 37 C.F.R. § 1.132 ("Schubert Declaration") in response to the Examiner's

rejections.¹ In its Response, Appellants asserted that one of ordinary skill in the art would not have combined the teachings of Schubert and Chen for at least three reasons.

First, the combination of Schubert and Chen, as applied by the Examiner, would not be utilized because of the disparity in elongation to break values stated by the respective references. (March 12, 2007, Response, p. 2). In particular, as stated in the final sentence of paragraph [0064] of Schubert (and elsewhere in the reference, as well as in the Schubert Declaration), elongation to break values that are too low, which are required by Chen, would cause the Schubert seal to rupture prematurely. (March 12, 2007, Response, p. 2).

Secondly, one of ordinary in the art would perceive the salient feature of Chen's sealing capabilities to be its beaded structure, rather than the specific material disclosed therein, such that one of ordinary skill in the art would lack the motivation to consider the Chen material. (March 12, 2007, Response, p. 2).

Lastly, the Schubert Declaration clarifies that the combination proposed by the Examiner is not a trivial or easily arrived upon matter, and it is submitted that Dr. Schubert's experience as one of the inventors in the cited reference as well as the current patent application makes him well-suited to opine regarding the matter. (March 12, 2007, Response, p. 2).

In the Final Office Action mailed May 24, 2007, the Examiner found Appellants' argument unpersuasive and also stated that the Schubert Declaration was insufficient to overcome the rejection of claims 1-12 and 18-21 because the "showing was not commensurate in scope with the claims." (May 24, 2007, Final Office Action, p. 2). The Examiner further asserted that:

Applicants failed to show or provide evidence on the instantly claimed invention compared to the invention disclosed in S[c]hubert et al. in view of Chen et al. as set forth under 35 U.S.C. § 103(a). The Applicants failed

¹ Appellants subsequently submitted a corrected Schubert Declaration on November 21, 2007, which fixed an obvious clerical error that appeared in paragraph 2 of the original Schubert Declaration. The Examiner entered the corrected Schubert Declaration in the Advisory Action mailed on December 28, 2007. The corrected Schubert Declaration is attached to the Evidence Appendix of this Brief. All references in this Brief will refer to the corrected version of the Schubert Declaration.

to provide evidence that the instantly claim[ed] invention is not the same gasket as that in Chen et al. reference.

(May 24, 2007, Final Office Action, p. 2).

Appellants respectfully traverse the Examiner's contention. First, the Examiner is impermissibly attempting to shift the burden to Appellants to show that the gasket claimed in Chen "is not the same" as the claimed invention. The Examiner does not cite any authority for this proposition. Instead, the Examiner bears the initial burden of factually supporting any alleged *prima facie* case of obviousness. See *In re Piasecki*, 745 F.2d 1468, 223 U.S.P.Q. 785 (Fed. Cir. 1984). Furthermore, the fact that the Examiner would like Appellants to prove that the gasket disclosed in Chen is not the same weakens the Examiner's position that the Examiner has carried the initial burden of proving a *prima facie* case.

Second, Appellants assert that the Schubert Declaration is commensurate in scope with the claimed invention. All of the claims of the current patent application require a first thermoplastic seal member comprising a thermoplastic resin and more than 10 weight percent of a thermal-stabilizing filler. An inherent property of any thermoplastic seal is its tensile elongation to break, which is relevant to the ability of the electrochemical battery cell to vent. As stated in the Abstract of the patent application, the thermoplastic seal provides a reliable pressure relief vent over a broad temperature. On page 3 lines 5-7, the specification also states that when the internal cell pressure exceeds a predetermined abnormally high level, the vent ball (or the ball and bushing) are forced out of the cover, leaving an opening through which pressure is released. Schubert expressly states that elongation is important for seal members that are designed to rupture to release internal pressure, as is the case in the present invention. (Schubert [0064]).

Moreover, the Examiner cites Chen for the teaching that thermal-stabilizing fillers/fibers would have been combined with the electrochemical battery cell taught in Schubert. Yet, the Examiner wishes to disregard the express teachings of properties of those fillers/fibers which teach away from the combination of the same reference, as further discussed in more detail below. The Schubert Declaration shows the inconsistency in the Examiner's theory that one having ordinary skill in the art would not

have combined the thermal-stabilizing fillers/fibers from Chen in the electrochemical battery cell taught in Schubert. Accordingly, for at least the foregoing reasons, the Schubert Declaration is commensurate in scope with the claimed invention since it relates to properties of the claimed thermoplastic seal.

Third, prior art references must be considered in their entirety, i.e., as a whole, including portions that would lead away from the claimed invention. *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 1552, 220 U.S.P.Q. 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). “A *prima facie* case of obviousness can be rebutted if the applicant ... can show ‘that the art in any material respect taught away’ from the claimed invention.” *In re Geisler*, 116 F.3d 1465, 1469, 43 U.S.P.Q.2d 1362, 1365 (Fed. Cir. 1997) “A reference may be said to teach away when a person of ordinary skill, upon reading the reference, would be discouraged from following the path set out in the reference, or would be led in a direction divergent from the path that was taken by the applicant.” *In re Gurley*, 27 F.3d 551, 553, 31 U.S.P.Q.2d 1130, 1131 (Fed. Cir. 1994).

The Examiner stated that it would have been obvious to combine the Schubert electrochemical battery cell with the thermo-stabilizing filler disclosed in Chen. However, Schubert and Chen contain disclosures which expressly teach away from combining the references. Schubert teaches that appropriate seal members for electrochemical cells must have a tensile strength elongation to break of at least 20%, and that preferred materials have tensile elongation to break of at least 150%. (Schubert Declaration ¶4; Schubert [0064]). Schubert also states that, “[i]f the elongation to break is too low, the seal member [of an electrochemical battery cell] will tend to rupture prematurely.” (Schubert [0064]). In contrast, Chen teaches various admixtures of resin and fibers, all of which have ultimate elongations well below 10%. (Schubert Declaration ¶3). These disclosures would have discouraged one of ordinary skill in the art from combining the Chen thermo-stabilizing fillers with the Schubert electrochemical battery cell. (Schubert Declaration ¶5). Therefore, even assuming that the Examiner had carried the burden of proving a *prima facie* case of obviousness, this teaching away defeats the same.

In response to Appellants' argument with regard to 'teaching away,' the Examiner stated:

Though the S[c]hubert et al. teaches negatively against using a gasket that has under a 10% elongation, the S[c]hubert et al reference had reinforced the invention of Chen et al. and S[c]hubert et al. are combinable and has been combined before to obtain not so favorable results.

(May 24, 2007, Final Office Action, p. 3 (emphasis added)).

The Examiner states that Schubert "teaches negatively" against using a gasket that has under a 10% elongation. The Examiner is essentially admitting that Schubert does in fact teach away from combining the teachings of Schubert with the teachings of Chen. Second, the Examiner states that Chen and Schubert have "been combined before" to obtain "not so favorable results." Even assuming that the Examiner was correct that the reference teachings were combined, which Appellant does not agree, this statement by the Examiner is evidence of the failure of others to successfully combine the teachings of Schubert and Chen to arrive at the instantly claimed invention. Failure of others is evidence as a secondary consideration of nonobviousness. *Graham v. John Deere Co. of Kansas City*, 383 U.S. 1, 17 (1966).

For at least the foregoing reasons, when considering the prior art in their entirety, Appellants respectfully submit that claims 1-12 and 18-21 would not have been obvious in view of the cited combination of Schubert and Chen.

- B. Rejection of Claims 13-17 and 23 Under 35 U.S.C. § 103(a) as Unpatentable Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in view of U.S. Patent No. 6,236,205 to Chen et al., and Further in View of U.S. Patent No. 4,804,595 to Bakos et al.

Of this group of claims, claims 13-17 depend from independent claim 1. Claim 23 depends from independent claim 18. Claims 13-17 and 23 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Schubert in view of Chen, and further in view of U.S. Patent No. 4,804,595 to Bakos et al. Appellants respectfully appeal this rejection.

Since claims 13-17 depend from independent claim 1 and claim 23 depends from independent claim 18, Appellants respectfully submit that claims 13-17 and 23 should be

allowable for the same reasons set forth above with respect to the rejection of independent claims 1 and 18.

- C. Rejection of Claims 24 and 25 Under 35 U.S.C. § 103(a) as Unpatentable Over U.S. Patent Application Publication No. 2003/0118902 to Schubert et al. in view of U.S. Patent No. 6,236,205 to Chen et al., and Further in View of U.S. Patent No. 4,501,805 to Yasuda et al.

Of this group of claims, claims 24 and 25 depend from independent claim 18. Claims 24 and 25 stand rejected under 35 U.S.C. § 103(a) as unpatentable over Schubert in view of Chen, and further in view of U.S. Patent No. 4,501,805 to Yasuda et al. ("Yasuda") Appellants respectfully appeal this rejection.

Since claims 24 and 25 depend from independent claim 18, Appellants respectfully submit that claims 24 and 25 should be allowable for the same reasons set forth above with respect to the rejection of independent claim 18.

Appellants also respectfully assert that claims 24 and 25 should be allowable for the additional reason that one of ordinary skill in the art would not have combined Yasuda with Schubert and Chen to arrive at the claimed invention. The Examiner asserted the following reason for the rejection:

The Schubert et al. and Chen et al. reference...do not disclose the thermoplastic resin material is ethylene-tetrafluoroethylene. However, the Yasuda et al. reference discloses a gasket made of ethylene-tetrafluoroethylene for insulation (Column 1, Lines 39-51). Therefore, it would have been obvious to one of ordinary skill in the art at the time in [sic] the invention was made to incorporate ethylene-tetrafluoroethylene as disclosed by Yasuda et al. into the gasket as disclosed by Schubert et al. and Chen et al. to prevent electrolyte creepage.

Appellants respectfully assert that one of ordinary skill in the art would not have combined Yasuda with Schubert and Chen to arrive at the claimed invention. In fact, Yasuda teaches away from the combination. The sections immediately following the portion of Yasuda cited by the Examiner shows that one of ordinary skill in the art would have been discouraged from combining Yasuda with Schubert and Chen. Specifically, Yasuda states:

However, while materials such as polytetrafluoroethylene and ethylene-tetrafluoroethylene copolymer have been employed in cell gaskets, these

compounds do not possess as desirable a resistance to cold flow under pressures as to other gasket materials such as nylon, polypropylene and the like.

(Yasuda, col. 1, ll. 49-55 (emphasis added)). Yasuda further states:

Consequently, nylon and similar materials such as polypropylene will provide more effective seals than will fluropolymer gaskets. Moreover, such fluoropolymers are relatively expensive and thus are undesirable from a commercial standpoint.

(Yasuda, col. 2, ll. 4-9). The Yasuda reference clearly teaches away from combining ethylene-tetrafluoroethylene with Schubert and Chen to arrive at claims 24 and 25. Accordingly, Appellants respectfully assert that claims 24 and 25 are also not obvious for this additional reason.

VIII. Conclusion

For at least the foregoing reasons, and as apparent from examining the invention defined by claims 1-25, claims 1-25 would not have been obvious when properly considering the cited references. Appellants respectfully request that the Examiner's rejections of claims 1-25 under 35 U.S.C. § 103(a) be reversed, and that the application be passed to issuance forthwith.

Respectfully submitted,

January 22, 2008
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IX. Claims Appendix

1. An electrochemical battery cell comprising:
 - a housing comprising a metal container with at least one open end and at least a first metal cover disposed in the at least one open end of the container;
 - a positive electrode;
 - a negative electrode;
 - a separator disposed between the positive and negative electrodes;
 - an electrolyte; and
 - a first thermoplastic seal member, comprising a thermoplastic resin and more than 10 weight percent of a thermal-stabilizing filler, the first thermoplastic seal member sealing an aperture in at least one of the container and the first cover and forming at least a part of a pressure relief vent for releasing pressure from the cell.
2. The cell as defined in claim 1, wherein the first thermoplastic seal member comprises at least 15 weight percent of the thermal-stabilizing filler.
3. The cell as defined in claim 1, wherein the filler comprises a glass.
4. The cell as defined in claim 3, wherein the glass comprises glass fibers.
5. The cell as defined in claim 3, wherein the glass comprises an E-glass.
6. The cell as defined in claim 1, wherein cell further comprises a second thermoplastic seal member providing a seal between the container and the first cover.
7. The cell as defined in claim 1, wherein the first thermoplastic seal member comprises a hollow cylindrical shape and is disposed within the aperture in the first metal cover.
8. The cell as defined in claim 7, wherein the pressure relief vent further comprises a plug

disposed within the first thermoplastic seal member and the first metal cover, the first thermoplastic seal member and the plug cooperate to form a compression seal for the aperture.

9. The cell as defined in claim 8, wherein the plug is in the form of sphere.

10. The cell as defined in claim 9, wherein the plug comprises one member of the group consisting of a metal and a glass.

11. The cell as defined in claim 7, wherein the first thermoplastic seal member is a plug and the pressure relief mechanism consists of the plug disposed within the aperture in the first metal cover.

12. The cell as defined in claim 1, wherein the electrolyte is a nonaqueous electrolyte.

13. The cell as defined in claim 12, wherein the electrolyte comprises an organic solvent.

14. The cell as defined in claim 13, wherein the negative electrode comprises at least one member of the group consisting of lithium, a lithium alloy and a lithium intercalation compound.

15. The cell as defined in claim 14, wherein the positive electrode comprises at least one member of the group consisting of iron disulfide, manganese dioxide and a lithium intercalation compound.

16. The cell as defined in claim 13, wherein the organic solvent comprises at least one ether compound.

17. The cell as defined in claim 16, wherein the organic solvent comprises at least 80 volume percent of one or more ethers having a boiling point no greater than 90° C.

18. An electrochemical battery cell comprising:

a housing comprising a metal container with at least one open end and at least a first metal cover disposed in the at least one open end of the container;

a pressure relief vent;

a positive electrode;

a negative electrode comprising at least one member of the group consisting of lithium, a lithium alloy and a lithium intercalation compound;

a separator disposed between the positive and negative electrodes;

a nonaqueous electrolyte comprising an organic solvent; and

a first thermoplastic seal member sealing an aperture in the first cover;

wherein the thermoplastic seal member:

is made from a material comprising at least one polymeric resin selected from the group consisting of ethylene-tetrafluoroethylene, polybutylene terephthalate, polyphenylene sulfide, polyphthalamide, ethylene-chlorotrifluoroethylene, chlorotrifluoroethylene, perfluoroalkoxyalkane, fluorinated perfluoroethylene polypropylene and polyetherether ketone, as well as more than 10 weight percent of a thermal-stabilizing filler;

has a hollow cylindrical shape; and

cooperates with the first metal cover and a plug disposed within the thermoplastic seal member to form a compression seal for the aperture and to release pressurized gas from within the cell when a cell internal pressure exceeds a predetermined level.

19. The cell as defined in claim 18, wherein the at least one polymeric resin is selected from the group consisting of ethylene-tetrafluoroethylene, polybutylene terephthalate, polyphenylene sulfide and polyphthalamide.

20. The cell as defined in claim 18, wherein the first thermoplastic seal member comprises at least 15 weight percent of the thermal-stabilizing filler.

21. The cell as defined in claim 18, wherein the filler comprises glass fibers comprising an E-glass.
22. The cell as defined in claim 18, wherein the hollow cylindrical shape has a wall with an average original thickness, before the first thermoplastic seal member is placed into the first metal cover aperture, of 0.006 to 0.015 inch and is compressed by an average of 25 to 40 percent of the original thickness between the first metal cover and the plug.
23. The cell as defined in claim 19, wherein the organic solvent comprises at least 90 volume percent ethers with boiling points no greater than 90° C.
24. The cell as defined in claim 19, wherein the at least one resin is selected from the group consisting of ethylene-tetrafluoroethylene and polybutylene terephthalate.
25. The cell as defined in claim 24, wherein the resin is ethylene-tetrafluoroethylene.

X. Evidence Appendix

The following Corrected Affidavit of Mark A. Schubert was entered in the Examiner's Advisory Action mailed on December 28, 2007.

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CORRECTED AFFIDAVIT OF MARK A. SCHUBERT PURSUANT TO 37 CFR § 1.132

I, Mark A. Schubert, declare as follows:

1. I received a M.S. and a Ph.D. in macro-molecular science from Case Western Reserve University. Additionally, I have over 10 years of experience in working with electrochemical cells and, more specifically, sealing members for electrochemical cell components.
2. I am one of the inventors of the invention described and claimed in United States Patent Application Serial No. 10/682,223, filed on October 9, 2003 and entitled "Nonequeous Cell with Improved Thermoplastic Sealing Member" (the current application). I am also one of the inventors of the invention described in United States Patent Application Publication No. 2003/0118902, published on June 26, 2003 and entitled "Seal for Electrochemical Cell" ("the Schubert Patent Publication"). I have personal knowledge as to the subject matter of both of these items.
3. I have read and understand United States Patent No. 5,236,205 to Chen et al. ("the Chen Patent"). As shown at column 5, lines 21-45, and elsewhere throughout the Chen Patent, various admixtures of resin and fibers are disclosed, all of which have ultimate elongations well below 10%. Based on my understanding and experience, the term "ultimate elongation" is synonymous with the term "tensile elongation to break".
4. The Schubert Patent Publication discloses the use of a thermoplastic resin as a sealing member for an electrochemical cell. However, for the reasons discussed in the Schubert Patent Publication, appropriate resins for electrochemical cells must have at a tensile elongation to break of at least 40%, as shown in Figure 6, and the preferred materials in the Schubert Patent Publication have tensile elongation to break of at least 150%.
5. Based on the foregoing, it is my opinion based on my understanding and experience that one of ordinary skill in the art would not find it obvious to use the gasket material disclosed in Chen Patent as a suitable substitute for the materials described in the Schubert Patent Publication because of the disparity in tensile elongation to break values.
6. Moreover, the Chen Patent teaches an automotive seal with an integrally formed bead that deforms in order to have high unit area loadings and to conform to small

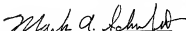
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imperfections, as discussed at column 5, line 64 through column 6, line 6. Thus, one of ordinary skill in the art would understand the Chen Patent's focus on the shape of the gasket as being the significant aspect of its sealing capabilities. In short, this solution for enhanced sealing taught by the Chen Patent (i.e., formation of a deformation bead for automotive applications) is not applicable to the exigencies of an electrochemical cell.

7. As discussed in my current application, difficulties of compatibility between the electrolyte and the sealing member material, as well as the vapor transmission rate of the sealing member material, are additional reasons why one of ordinary skill in the art could not simply substitute any thermoplastic into the Schubert Patent Publication. In fact, my experience has demonstrated that it is extremely difficult to find thermoplastics that are compatible with the nonaqueous electrolytes contemplated by my current patent application, and it is for this reason that no nonaqueous electrolyte examples were described in the Schubert Patent Publication. Thus, one of ordinary skill in the art would understand that the complexities presented by electrolyte-sealing member compatibility means that it is not necessarily obvious to make a direct substitution of a known sealing member material into one for an electrochemical cell.
8. I only recently became aware of an error that made in the previous affidavit I submitted on March 9, 2007, without any deceptive intent. Specifically, there was a misidentification whereby the current application and "the Schubert Patent Publication" were transposed in paragraph 2. The purpose of this affidavit is to correct this obvious clerical error and to better perfect the written record for this case. Accordingly, this affidavit is expressly intended to replace that previous affidavit.

Under penalty of perjury, I believe the foregoing to be true and correct as of this 20th day of November, 2007, in Westlake, Ohio.


Mark A. Schubert

Applicants : Schubert et al.
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XI. Related Proceedings Appendix

None.